

DOS MS-016

Docket Nos. 50-282
and 50-306

FEB 21 1984

DISTRIBUTION:
 ✓ Docket File PMKreutzer-3
 NRC PDR DCDianni
 L PDR Gray File +4
 NSIC ACRS-10
 ORB#3 Rdg JHulman
 DEisenhut HRDenton
 OELD SECY RDiggs
 CMiles LJHarmon
 EJordan TBarnhart-8
 JTaylor WJones
 DBrinkman

Mr. D. M. Musolf
 Nuclear Support Services Department
 Northern States Power Company
 414 Nicollet Mall - 8th Floor
 Minneapolis, Minnesota 55401

Dear Mr. Musolf:

The Commission has issued the enclosed Amendment Nos. 6 and 6 to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2 in response to your application dated July 1, 1983 as supplemented by letter dated August 26, 1983.

The amendments are in response to the matters listed below.

1. Containment System H₂ Recombiners.
2. K(z) Curve explanation.
3. Snubber addition.
4. Chlorine Detection System (NUREG-0737 Item III.D.3.4).
5. Control Room Air Treatment System.
6. Deletion of FSAR Table 7.7-2 from Table TS.4.1-1.
7. Steam Exclusion System.
8. Instrumentation dealing with containment pressure, water level and hydrogen monitoring (NUREG-0737 Items II.F.1.4, II.F.1.5 and II.F.1.6).

Your proposed Technical Specification (TS) changes related to the deletion of certain remarks in the remark column of Table TS.4.1-1 are denied for the lack of adequate justification. The amendments revise the TS incorporating changes related to all other items described above.

A copy of the Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's next monthly Federal Register notice.

Sincerely,

Original signed by

Dominic C. DiIanni, Project Manager
 Operating Reactors Branch #3
 Division of Licensing

Enclosures:

1. Amendment No. 6 to DPR-42
2. Amendment No. 6 to DPR-60
3. Safety Evaluation

cc: See next page

ORB#3:DL
 PMKreutzer
 1/11/84

ORB#3:DL
 DCDianni/pn
 1/24/84

ORB#3:DL
 JRMiller
 1/18/84

OELD
 2/3/84

AD:OR:DL
 GCLainas
 2/17/84

*immediately before
 issuing amendment
 be sure no significant
 hazard comments or
 hearing requests have been
 received. If they have
 been, report back
 to OELD before
 issuing amendment*

840305023B 840221
 PDR ADOCK 05000282
 P PDR

Northern States Power Company

cc:

Gerald Charnoff, Esq.
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N.W.
Washington, D. C. 20036

Ms. Sandra Gardebring
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

Mr. Wm. Miller
Goodhue County Auditor
Red Wing, Minnesota 55066

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: Regional Radiation
Representative
230 South Dearborn Street
Chicago, Illinois 60604

Mr. E. L. Watzl, Plant Manager
Prairie Island Nuclear Generating Plant
Northern States Power Company
Route 2
Welch, Minnesota 55089

Jocelyn F. Olson, Esquire
Special Assistant Attorney General
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

U.S. Nuclear Regulatory Commission
Resident Inspectors Office
Route #2, Box 500A
Welch, Minnesota 55089

Regional Administrator
Nuclear Regulatory Commission, Region III
Office of Executive Director for Operations
799 Roosevelt Road
Glen Ellyn, Illinois 60137



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 68
License No. DPR-42

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northern States Power Company (the licensee) dated July 1, 1983 as supplemented August 26, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

8403050243 840221
PDR ADOCK 05000282
P PDR

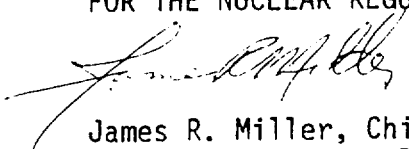
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-42 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 68, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 21, 1984



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 62
License No. DPR-60

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Northern States Power Company (the licensee) dated July 1, 1983 as supplemented August 26, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public;
and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

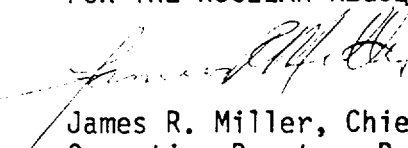
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-60 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 62, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 21, 1984

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NOS. 68 AND 62 TO FACILITY OPERATING LICENSE

NOS. DPR-42 AND DPR-60

DOCKET NOS. 50-282 AND 50-306

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the area of changes.

Remove

TS.3.6-3A
TS.3.6-6
TS.3.10-9
Table TS.3.12-1
(Page 7 of 8)
TS.3.13-1
TS.3.13-1A
TS.3.13-2
Table TS.3.15-1
Table TS.4.1-1
(Page 4 of 5)
(Page 5 of 5)
TS.4.4-5
TS.4.4-5A
TS.4.8-2

Insert

TS.3.6-3A
TS.3.6-6
TS.3.10-9
Table TS.3.12-1
(Page 7 of 8)
TS.3.13-1
TS.3.13-1A
TS.3.13-2
Table TS.3.15-1
Table TS.4.1-1
(Page 4 of 5)
(Page 5 of 5)
TS.4.4-5
TS.4.4-5A
TS.4.8-2

E. Emergency Air Treatment Systems

1. Except as specified in Specification 3.6.E.3 below, all trains of the Shield Building Ventilation System, the Auxiliary Building Special Ventilation System, and the diesel generation required for their operation shall be operable at all times.
2.
 - a. The results of in-place DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks respectively shall show $>99\%$ DOP removal for particles having a mean diameter of 0.7 microns and $\geq 99\%$ halogenated hydrocarbon removal.
 - b. The results of laboratory carbon sample analysis shall show $\geq 90\%$ radioactive methyl iodide removal efficiency (130°C, 95% RH).
3. From and after the date that one train of the Shield Building Ventilation System or one train of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days (unless such train is made operable) provided that during such seven days the redundant train is verified to be operable daily.
4. If the conditions for operability of the Shield Building Ventilation System cannot be met, procedures shall be initiated immediately to establish reactor conditions for which containment integrity is not required for the affected unit.
5. If the conditions for operability of the Auxiliary Building Special Ventilation System cannot be met, procedures shall be initiated immediately to establish reactor conditions for which containment integrity is not required in either unit.

F. Electric Hydrogen Recombiners

Both containment hydrogen recombiner systems shall be operable whenever the reactor is above hot shutdown. If one hydrogen recombiner system becomes inoperable, restore the inoperable system to operable status within 30 days or be in at least hot shutdown within the next 6 hours.

periodic tests combined with the qualification testing conducted on new filters and adsorber provide a high level of assurance that the emergency air treatment systems will perform as predicted in the accident analyses.

In-place testing procedures will be established utilizing applicable sections of ANSI N510 - 1975 standard as a procedural guideline only.

The operability of the equipment and systems required for the control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with (1) zirconium-water reactors, (2) radiolytic decomposition of water, and (3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

References

- (1) FSAR, Table 3.2.1-1
- (2) FSAR, Section 5
- (3) FSAR, Section 9.6.5 and Appendix G
- (4) Safety Evaluation Report, dated September 28, 1972
Section 15 and Supplement No. 2 dated April 30, 1973
- (5) Letter to NSP dated November 29, 1973
- (6) Letter to NSP dated September 16, 1974

Prairie Island Unit 1 - Amendment No. 17, 68

Prairie Island Unit 2 - Amendment No. 11, 62

mechanical properties to within assumed design criteria. In addition, limiting the peak linear power density during Condition I events provides assurance that the initial conditions assumed for the LOCA analyses are met and the ECCS acceptance criteria limit of 2200°F is not exceeded.

During operation, the plant staff compares the measured hot channel factors, F_Q^N and F_{QH}^N , (described later) to the limit determined in the transient and LOCA analyses. The limiting $F_Q(Z)$ includes measurement, engineering, and calculational uncertainties. The terms on the right side of the equations in section 3.10.B.1 represent the analytical limits. Those terms on the left side represent the measured hot channel factors corrected for engineering, calculational, and measurement uncertainties.

$F_Q(Z)$, Height Dependent Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod at core elevation Z divided by the average fuel rod heat flux, allowing for manufacturing tolerances on fuel pellets and rods. The maximum value of $F_Q(Z)$ is $2.32/P$ for the Prairie Island reactors. This value is restricted further by the $K(Z)$ and $BU(E_j)$ functions described below. The product of these three factors is $F_Q(Z)^j$.

The $K(Z)$ function shown in Figure TS.3.10-5 is a normalized function that limits $F_Q(Z)$ axially for three regions. The $K(Z)$ specified for the lowest six (6) feet of the core is arbitrarily flat since the lower part of the core is generally not limiting. Above that region, the $K(Z)$ value is based on large and small break LOCA analyses. $F_Q(Z)$ in the uppermost region is limited to reduce the PCT expected during a small break LOCA since this region of the core is expected to uncover temporarily for some small break LOCAs.

The $BU(E_j)$ function shown in Figure TS.3.10-7 is a normalized function that limits $F_Q(Z)$ based on exposure dependent analyses for the ENC fuel. These analyses consider pin internal pressure uncertainties, fuel swelling, rupture pressures and flow blockage.

F_Q^N is the measured Nuclear Hot Channel Factor, defined as the maximum local heat flux in the core divided by the average heat flux in the core. Heat fluxes are derived from measured neutron fluxes and fuel enrichment.

$V(Z)$ is an axially dependent function applied to the equilibrium measured F_Q^N to bound F_Q^N 's that could be measured at non-equilibrium conditions. This function is based on power distribution control analyses that evaluated the effect of burnable poisons, rod position, axial effects, and xenon worth.

F_Q^E , Engineering Heat Flux Hot Channel Factor, is defined as the allowance on heat flux required for manufacturing tolerances. The engineering factor allows for local variations in enrichment, pellet density and diameter, surface area of the fuel rod and eccentricity of the gap between pellet and clad. Combined statistically the net effect is a factor of 1.03 to be applied to fuel rod surface heat flux.

SAFETY RELATED SNUBBERS

<u>Snubber No.</u>	<u>Location</u>	<u>Elevation</u>	<u>Accessible or Inaccessible (A or I)</u>	<u>Snubbers Especially Difficult to Remove</u>	<u>In High Radiation Areas During Shutdown</u>
<u>UNIT II</u>					
RCVCH-1396	Chemical & Vol.	702'-10"	I		
RCVCH-1505	Control	708'-6"	I		
RCVCH-1513		710'-1"	I		
RCVCH-1524		719'-1"	I		
RCVCH-1574		721'-0"	I		
RCVCH-1668		705'-5"	I		
RCVCH-1373		722'-11"	I		
RCVCH-1389		706'-1"	I		
RRCH-253		704'-4"	I		
RRCH-255		704'-8"	I		
RRCH-261		707'-2"	I		
RRCH-288		707'-2"	I		
RRCH-291		704'-6"	I		
RRCH-292		704'-7"	I		
CVCH-166		708'-0"	A		
<u>UNIT I</u>					
CCH-304	Comp Cooling	717'-7"	A		
CCH-373		712'-4"	A		
CCH-376 A&B		700'-5"	A		
CCH-377		703'-0"	A		
CCH-378		708'-4"	A		
CCH-380		670'-8"	A		
CCH-381 A&B		671'-4"	A		
CCH-397		699'-3"	A		
CCH-398 A&B		671'-4"	A		
<u>UNIT II</u>					
CCH-161	Comp Cooling	717'-7"	A		
CCH-166		719'-11"	A		
CCH-167		720'-0"	A		
CCH-172		720'-0"	A		
CCH-173		708'-5"	A		
CCH-176		705'-3"	A		
CCH-179 A&B		671'-4"	A		
CCH-180		670'-8"	A		
CCH-181		708'-4"	A		
CCH-182		704'-2"	A		
CCH-185 A&B		671'-4"	A		
CCH-186		670'-10"	A		
<u>UNIT I</u>					
RCSH-81	Containment Spray	760'-9"	I		
RCSH-82		760'-8"	I		
RCSH-83 A&B		732'-1"	I		
<u>UNIT II</u>					
CSH-75 A&B	Containment Spray	731'-10"	I		
CSH-76		752'-7"	I		
CSH-79		751'-9"	I		
CSH-82 A&B		731'-11"	I		
CSH-83		767'-2"	I		
CSH-84		767'-2"	I		
CSH-210		698'-0"	I		
CSH-215		698'-0"	A		
CSH-224		710'-6"	A		

3.13 CONTROL ROOM AIR TREATMENT SYSTEM

Applicability

Applies to the operability of the Control Room Special Ventilation System.

Objective

To specify operability requirements for the Control Room Special Ventilation System.

Specification

- A. Except as specified in Specification 3.13.C below, both trains of the Control Room Special Ventilation System shall be operable at all times when containment integrity is required.
- B. Each Control Room Special Ventilation System train shall satisfy the following operability requirements:
 1. The results of in-place DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks respectively shall show $\geq 99\%$ DOP removal for particles having a mean diameter of 0.7 microns and $\geq 99\%$ halogenated hydrocarbon removal.
 2. The results of laboratory carbon sample analysis shall show $\geq 90\%$ radioactive methyl iodide removal efficiency (130°C, 95% RH).
 3. Fans shall be shown to operate within $\pm 10\%$ of 4000 cfm.
- C. From and after the date that one train of the Control Room Special Ventilation System is made or found to be inoperable for any reason, reactor operation or refueling operations are permissible only during the succeeding seven days (unless such train is made operable) provided that during such seven days the redundant train is verified to be operable daily.
- D. If conditions A, B & C cannot be met, reactor shutdown shall be initiated and the reactors shall be in cold shutdown within 36 hours and refueling operations shall be terminated within two hours.

- E. Two independent chlorine detection systems, each consisting of two channels of instrumentation shall be operable at all times except as specified below. The alarm/trip setpoint shall be adjusted to actuate at a chlorine concentration of less than or equal to 5 ppm.
1. If one chlorine detection channel for one train of ventilation is inoperable, then within seven days:
 - a. Restore the inoperable channel to operable status, or
 - b. Operate the redundant ventilation system in the normal (non-recirculation) mode, and close the outside air supply dampers for the affected train of ventilation.
 2. If both chlorine detection channels for one train of ventilation are inoperable then within six hours:
 - a. Restore at least one channel to operable status, or
 - b. Operate the redundant ventilation system in the normal (non-recirculation) mode and close the outside air supply dampers for the affected train of ventilation.
 3. If all chlorine monitors for both trains of ventilation are inoperable then within six hours close all Control Room ventilation outside air supply dampers.

3.13 CONTROL ROOM AIR TREATMENT SYSTEM

Basis

The Control Room Special Ventilation System is designed to filter the Control Room atmosphere during accident conditions. The system is designed to automatically start on a high radiation signal in the ventilation air or when a Safety Injection signal is received from either unit. Two completely redundant trains are provided.

Each train has a filter unit consisting of a prefilter, HEPA filters, and charcoal adsorbers. The HEPA filters remove particulates from the Control Room atmosphere and prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to remove any radioiodines from the Control Room atmosphere. The in-place test results should indicate a HEPA filter leakage of less than 1% through DOP testing and a charcoal adsorber leakage of less than 1% through halogenated hydrocarbon testing. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90% under test conditions more severe than expected accident conditions. System flows should be near their design values. The verification of these performance parameters combined with the qualification testing conducted on new filters and adsorber provide a high level of assurance that the Control Room Special Ventilation System will perform as predicted in reducing potential doses to plant personnel below those levels stated in Criterion 19 of Appendix A to 10 CFR 50.

In-place testing procedures will be established utilizing applicable section of ANSI N510 - 1975 standard as a procedural guideline only.

The operability of the chlorine detection system ensures that sufficient capability is available to promptly detect and initiate protective action in the event of an accidental chlorine release. This capability is required to protect the control room personnel and is consistent with the recommendations of Regulatory Guide 1.95 "Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chlorine Release," February 1975.

The Control Room Special Ventilation System remains operable if the ventilation system can be operated in the recirculation mode.

TABLE TS.3.15-1
EVENT MONITORING INSTRUMENTATION - PROCESS & CONTAINMENT

Prairie Island Unit 1 - Amendment No. 46, 61, 68
Prairie Island Unit 2 - Amendment No. 40, 57, 62

<u>Instrument</u>	<u>Required Total No. of Channels</u>	<u>Minimum Channels Operable</u>
1. Pressurizer Water Level	2	1
2. Auxiliary Feedwater Flow to Steam Generators (One Channel Flow and One Channel Wide Range Level for Each Steam Generator)	2/steam gen	1/steam gen
3. Reactor Coolant System Subcooling Margin ***	2	1
4. Pressurizer Power Operated Relief Valve Position (One Common Channel Temperature, One Channel Limit Switch per Valve, and One Channel Acoustic Sensor per Valve*)	2/valve	1/valve
5. Pressurizer Power Operated Relief Block Valve Position (One Common Channel Temperature, One Channel Limit Switch per Valve, and One Channel Acoustic Sensor per Valve*)	2/valve	1/valve
6. Pressurizer Safety Valve Position (One Channel Temperature per Valve and Common Acoustic Sensor**)	2/valve	1/valve
7. a. Containment Water Level (wide range)	2	1
b. Containment Water Level (narrow range)	2	1
8. Containment Hydrogen Monitor (2 sensors per Channel)	2	1
9. Containment Pressure (wide range)	2	1

- * - A common acoustic sensor provides backup position indication for each pressurizer power operated relief valve and its associated block valve.
- ** - The acoustic sensor channel is common to both valves. When operable, the acoustic sensor may be considered as an operable channel for each valve.
- *** - Fully qualified input instrumentation is being installed in accordance with the NRC's TMI Action Plan. Until installation is completed, this function will be satisfied using the plant process computer.

Table TS.4.1-1
(Page 4 of 5)

	<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Functional Test</u>	<u>Response Test</u>	<u>Remarks</u>
Prairie Island Unit 1 - Amendment No. 55, 56, 57, 58, 59, 61, 62, 63, 68	27. Turbine Overspeed Protection Trip Channel	NA	R	M	NA	
	28. Deleted					
	29. Deleted					
	30. Deleted					
	31. Seismic Monitors	R	R	NA	NA	
	32. Coolant Flow - RTD Bypass Flowmeter	S	R	M	NA	
	33. CRDM Cooling Shroud	S	NA	R	NA	FSAR page 3.2-56
	34. Reactor Gap Exhaust Air Temperature	S	NA	R	NA	
	35a. Post-Accident Monitoring Instruments	M	R	NA	NA	Includes all those in Table TS.3.15-1 (except for containment hydrogen monitors which are separately specified in this table)
	b. Post-Accident Monitoring Radiation Instruments	D	R	M	NA	Includes all those in Table TS.3.15-2
	36. Steam Exclusion Actuation System	W	Y	M	NA	See FSAR Appendix I, Section I.14.6
	37. Overpressure Mitigation System	NA	R	R	NA	Instrument Channels for PORV Control Including Overpressure Mitigation System
	38. Degraded Voltage 4 KV Safeguard Busses	NA	R	M	NA	
39. Loss of Voltage 4 KV Safeguard Busses	NA	R	M	NA		

TABLE TS.4.1-1
(Page 5 of 5)

Prairie Island Unit 1 - Amendment No. 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

	<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Functional Test</u>	<u>Response Test</u>	<u>Remarks</u>
40.	Auxiliary Feedwater Pump Suction Pressure	NA	R	R	NA	
41.	Auxiliary Feedwater Pump Discharge Pressure	NA	R	R	NA	
42.	NaOH Caustic Stand Pipe Level	W	R	M	NA	
43.	Control Room Ventilation System Chlorine Monitors	S	Y	M(1)	NA	
44.	Hydrogen Monitors	S	Q(2)	M	NA	
45.	Containment Temperature Monitors	M	R	NA	NA	

-
- S - Shift
 - D - Daily
 - W - Weekly
 - M - Monthly
 - Q - Quarterly
 - P - Prior to each startup if not done previous week
 - T - Prior to each startup following shutdown in excess of 2 days if not done in the previous 30 days

- (1) Verification of the chlorine monitor control logic only.
- (2) Test will be conducted per manufacturer's recommendations.

- Y - Yearly
- R - Each refueling shutdown
- NA - Not applicable
- * - See Specification 4.1.D

E. Containment Isolation Valves

During each refueling shutdown, the containment isolation valves, shield building ventilation valves, and the auxiliary building normal ventilation system isolation valves shall be tested for operability by applying a simulated accident signal to them.

F. Post Accident Containment Ventilation System

During each refueling shutdown, the operability of system recirculating fans and valves, including actuation and indication, shall be demonstrated.

G. Containment and Shield Building Air Temperature

Prior to establishing reactor conditions requiring containment integrity, the average air temperature difference between the containment and its associated Shield Building shall be verified to be within acceptable limits.

H. Containment Shell Temperature

Prior to establishing reactor conditions requiring containment integrity, the temperature of the containment vessel wall shall be verified to be within acceptable limits.

I. Electric Hydrogen Recombiners

Each hydrogen recombiner train shall be demonstrated Operable:

- a. At least once per 6 months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to greater than or equal to 700°F within 90 minutes. Upon reaching 700°F, increase the power setting to maximum power for 2 minutes and verify that the power meter reads greater than or equal to 60 kw.
- b. At least once per 18 months by:
 1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits,
 2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiner enclosure (i.e., loose wiring or structural connections, deposits of foreign materials, etc.), and
 3. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be greater than or equal to 10,000 ohms.

Prairie Island Unit 1 - Amendment No. 51, 62, 68

Prairie Island Unit 2 - Amendment No. 47, 56, 62

Basis

The containment system consists of a steel containment vessel, a concrete shield building, the auxiliary building special ventilation zone (ABSVZ), a shield building ventilation system, and an auxiliary building special ventilation system. In the event of a loss-of-coolant accident, a vacuum in the shield building annulus will cause most leakage from the containment vessel to be mixed in the annulus volume and recirculated through a filter system before its deferred release to the environment through the exhaust fan that maintains vacuum. Some of the leakage goes to the ABSVZ from which it is exhausted through a filter. A small fraction bypasses both filter systems.

The freestanding containment vessel is designed to accommodate the maximum internal pressure that would result from the Design Basis Accident.⁽¹⁾ For initial conditions typical of normal operation, 120°F and 15 psia, an instantaneous double-ended break with minimum safeguards results in a peak pressure of less than 46 psig at 268°F.

The containment will be strength-tested at 51.8 psig and leak-tested at 46.0 psig to meet acceptance specifications.

The safety analysis⁽²⁾⁽³⁾ is based on a conservatively chosen reference set of assumptions regarding the sequence of events relating to activity release and attainment and maintenance of vacuum in the shield building annulus and the auxiliary building special ventilation zone, the effectiveness of filtering, and the leak rate of the containment vessel as a function of time. The effects of variation in these assumptions, including that for leak rate, has been investigated thoroughly. A summary of the items of conservatism involved in the reference calculation and the magnitude of their effect upon off-site dose demonstrates the collective effectiveness of conservatism in these assumptions.

C. Steam Exclusion System

Isolation dampers in each duct that penetrates rooms containing equipment required for a high energy line rupture outside of containment shall be tested for operability once each month.

In addition, damper mating surfaces shall be examined visually once each year to assure that no physical change has occurred that could affect leakage.

Basis

Monthly testing of the auxiliary feedwater pumps, monthly valve inspections, and startup flow verification provide assurance that the AFW system will meet emergency demand requirements. The discharge valves of the pumps are normally open, as are the suction valves from the condensate storage tanks. Proper opening of the steam admission valve on each turbine-driven pump will be demonstrated each time a turbine-driven pump is tested. Ventilation system isolation dampers required to function for the postulated rupture of a high energy line will also be tested.

At 18-month intervals, pump starting and valve positioning is verified using test signals to simulate each of the automatic actuation parameters.

Reference

FSAR, Sections 6.6, 14, and Appendix I.

Prairie Island Unit 1 - Amendment No. 40, 68

Prairie Island Unit 2 - Amendment No. 40, 62



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NOS. 68 AND 62

TO FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 AND 50-306

Introduction

By letters dated July 1, 1983 and August 26, 1983, Northern States Power Company (NSP), the licensee, requested amendments to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 (PINGP). The requested amendments proposed changes to the Technical Specifications (TS) in the following areas.

1. TS 3.6-3A; TS Table 4.4-1 and TS 4.4-5 Containment System H₂ Recombiners.
2. TS 3.10-9 K(z) curve explanation.
3. Table TS 3.12-1 (p. 7 of 8) snubber addition.
4. TS 3.13-1A and Table TS 4.4-1 (p. 5 of 5) Chlorine Detection System (NUREG-0737 Item III.D.3.4).
5. TS 3.13.A and D Control Room Air Treatment System.
6. Table TS 4.1-1 References to FSAR Table 7.7-2.
7. Table TS 4.1-1 (p. 3 of 5 and 4&5) Referencing the FSAR related to items 18a, 18b, 33, 34 and 36.
8. TS 4.8C Steam Exclusion System.
9. Table TS 3.15-1 Containment pressure, level and hydrogen monitoring instrumentation (NUREG-0737 Items II.F.1.4, II.F.1.5 and II.F.1.6).

Items 1, 3, 4 and 9 above fall into the category where the licensee proposes to expand the scopes of limited conditions for plant operation and expand the maintenance surveillance of plant equipment due to the NRC staff imposing additional plant requirements. Other items 2, 5, 6, 7 and 8 above fall in the category of administrative changes related to either eliminating areas in the TS that could lead to confusion and inaccuracies or clarifying information in TS that references other documents (i.e. FSAR, USAR etc.).

Discussion and Evaluation

1. TS 3.6-3A, TS Table 4.4-1 and TS 4.4-5 Containment System H₂ Recombiners

The licensee has provided two hydrogen recombiners for each unit in order to meet the requirements of the Commission's rule 10 CFR 50.44(e). The purpose for the hydrogen recombiner system is to control the hydrogen concentration level in the containment atmosphere to ensure that the hydrogen

8403050249 840221
PDR ADDCK 05000282
P PDR

concentration is maintained below the flammable limit during post-LOCA conditions. The proposed TS follow the guidelines provided in the NRC's standard technical specifications (STS) in all areas except for the surveillance requirements.

Although minor differences between the licensee's proposed TS and the STS are due to installed recombiners (i.e., Westinghouse Model "B") being different than examples used in the STS, the licensee has agreed to include the surveillance requirements of the STS as part of these proposed amendments.

The installation of the hydrogen recombiners was followed by the NRC resident inspector. Based on this evaluation, the staff concludes that the licensee's proposed TS change as modified expands the scope of limited conditions for plant operation and meets the requirements of the STS for hydrogen recombiners. On this basis, the staff finds the proposed TS change as modified acceptable.

2. TS 3.10-9 K(z) curve explanation

The K(z) factor obtained from the K(z) curve, TS Figure 3.10.5 is applied to establish limits on the measured hot channel factors F_0 for core height. The proposed change deals with the explanation of the K(z) factor as it relates to the different core regions under accident conditions. Specifically, the explanation of the K(z) factor reads as follows in the existing TS.

"The K(z) function shown in Figure TS.3.10-5 is a normalized function that limits $F_0(z)$ axially for three reasons. The K(z) specified for the lowest six (6) feet of the core is based on large break LOCA analyses. Above this region the K(z) value is based on DNBR requirements since the minimum DNBR would be expected in this region of the core, based on power, pressure, and temperature. The K(z) value in the uppermost region of the core is based on the small break LOCA analyses. $F_0(z)$ in the uppermost region is limited to reduce the PCT expected during a small break LOCA since this region of the core is expected to uncover temporarily for some small break LOCA's."

The explanation of the K(z) factor would be changed to read as follows under the proposed TS change.

"The K(z) function shown in Figure TS.3.10-5 is a normalized function that limits $F_0(z)$ axially for three reasons. The K(z) specified for the lowest six (6) feet of the core is arbitrarily flat since the lower part of the core is generally not limiting. Above that region, the K(z) value is based on large and small break LOCA analyses. $F_0(z)$ in the uppermost region is limited to reduce the PCT expected during a small break LOCA since this region of the core is expected to uncover temporarily for some small break LOCA's."

Based on the above, the change would describe the $K(z)$ value for the core regions above the 6 feet height as now shown to relate DNBR requirement. The existing explanation of $K(z)$ for the core region above the 6 feet height is inaccurate because the $K(z)$ factor relates to the protection against the peak clad temperature during the large and small break LOCA, when the core is in nucleate boiling for which the departure from nucleate boiling ratio (DNBR) is not applicable. By the proposed change, the description of the $K(z)$ value for core regions above the 6 feet height would be based on the large and small break analysis. This change in no way affects the value of $K(z)$ factor on how it is obtained from the $K(z)$ curve in Figure TS 3.10-5. Therefore, the change will not affect any of the safety margins nor will it affect any of the existing TS limiting conditions of operations. On this basis, the staff finds the proposed change acceptable.

3. Table TS 3.12-1 (p. 7 of 8) snubber addition

The licensee proposes to add snubber CVCH-166 to the list of safety related snubbers. By letter dated March 23, 1983, the Commission issued Amendment Nos. 63 and 57 that revised Table TS 3.12-1 listing the hydraulic snubbers related to safety systems. Snubber CVCH-166 was inadvertently omitted from the TS Table as submitted by the licensee. This is considered a clerical error in that hydraulic snubber CVCH-166 always existed in the licensee's program listing of safety related snubbers that are periodically monitored, but inadvertently omitted in the TS Table 3.12-1. On this basis, the staff finds this proposed TS change related to the addition of snubber CVCH-166 acceptable.

4. TS 3.31-1A and TS 4.4-1 (p. 5 of 5) Chlorine Detection System

NUREG-0737 Item III.D.3.4, "Control Room Habitability," requires licensees to assure that control room operators will be adequately protected against the effects of accidental release of toxic and radioactive gases and that the nuclear power plant can be safely operated or shut down under design basis accident conditions (Criterion 19, "Control Room," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50). By letter dated April 9, 1982 the staff provided the licensee a safety evaluation finding the response to the requirements of NUREG-0737 acceptable. The staff's conclusion was predicated upon the licensee meeting an acceptable post-implementation review by the NRC Enforcement and Inspection Region III and changes to the TS.

A post-implementation review has been completed by the resident inspector who found the licensee's installation of the chlorine monitors acceptable in that monitors do meet the requirements of NUREG-0737. The detailed observation of the resident inspector on this matter is being addressed in an inspection report to be issued within 60 days from the issuance date of these amendments.

The licensee used the staff's model STS as guidance in preparing the proposed TS for the chlorine monitors. The staff's review of the licensee's limiting conditions for operation of the chlorine detection system shows that, in the event of an inoperable chlorine detection channel, the proposed TS would require closing outside air suction dampers instead of placing the control room ventilation in the recirculation modes as required by the model STS. Closing the outside dampers is equivalent to placing the control room ventilation in the recirculation mode since, by closing the outside dampers, the control room is isolated from any chlorine source (i.e., chlorine is not stored in the plant) and therefore the intent of model STS requirements is being met in this area. However, the proposed surveillance requirements related to a weekly channel check and a functional test tied to the refueling outage do not meet the guidance of the model STS. In order to meet the objective of the model STS, the licensee's proposed change was modified to include a channel check once per shift, a functional test once per month and a calibration check once per annum. The monthly functional test would be limited to the control logic of the monitors, since damper closure and fan operation are normally surveyed as part of the control room air treatment system tests of TS 4.14.A.2. These modifications to the proposed change were discussed with and agreed to by the licensee. On this basis, the proposed TS related to the limiting condition for operation and the surveillance requirements (as modified) for the chlorine detection system (NUREG-0737 Item III.D.3.4) are found acceptable.

5. TS 3.13 A and D Control Room Air Treatment System

The existing TS 3.13 A requires the control room special ventilation system and the diesel-generator to be operable at all times when containment integrity is required. The proposed change would delete the diesel generator from this TS. The existing TS 3.13 D uses the phrase "these conditions" in referencing conditions A, B and C. The proposed change is editorial in nature in that the word "these" is replaced with the letters A, B and C. This editorial change in no way changes the requirement nor the intent of the TS and is therefore acceptable.

The staff agrees with the licensee that addressing the operable status of the diesel-generator as part of the TS dealing with TS 3.13 control air treatment system is not necessary nor required.

The operability status of the diesel-generator as it (diesel-generator) relates to reactor operation is covered in TS 3.7B(2). In addition, containment integrity as it relates to reactor operation is covered in TS 3.6. On this basis, the two proposed changes to TS 3.13 are acceptable.

6. Table TS 4.1-1 References to FSAR Table 7.7-2

The Table TS 4.1-1 lists the plant instrumentation for safety related systems and components that must undergo checks, calibration and functional tests at frequencies specified in the table. Item 35 of TS Table 4.1-1 deals with

post-accident monitoring instrumentation and the remark column requires the licensee by reference to include instruments listed in the FSAR Table 7.7-2. The staff agrees with the licensee, that except for containment temperature monitors, all other instruments listed in the FSAR Table 7.7-2 are addressed in the existing TS. Although containment temperature monitors are part of the Regulatory Guide 1.97 review, the licensee has agreed to modify the proposed change to include containment temperature monitors as item 45. Deleting the reference to FSAR Table 7.7-2 will in no way reduce the level of surveillance to plant safety related equipment. On this basis, the staff finds the licensee's proposed change related to the deletion of the reference to FSAR Table 7.7-2 acceptable.

7. Table TS 4.1-1 (p. 3 of 5 and p. 4 of 5) FSAR item 18a, 18b, 33, 34 and 36

The licensee has proposed to delete the following in the remarks column of Table TS 4.1-1 for items 18a, 18b, 33, 34 and 36.

1. For containment pressure SI signal (item 18a), the remark column reads, "wide range containment pressure 1) isolation valve signal."
2. For containment pressure steam line isolation (Item 18b) the remark column reads, "Narrow Range Containment pressure."
3. For control rod drive mechanism (CRDM) cooling shroud exhaust air temperature item 33, the remark column reads, "FSAR 3.2-56."
4. For reactor gap exhaust air temperature (item 34), the remark column reads, "FSAR 5.4-2."
5. For steam exclusion actuation system (item 36), the remark column reads, "see FSAR Appendix I.14.6."

The licensee's basis for deleting these statements and reference to the FSAR in the remarks column of TS Table 4.1-1 is that, (1) they do not provide useful information; (2) they are misleading; and (3) they are redundant. The staff's review indicates that the licensee has not adequately justified the deletion of the statements and references to FSAR in the remarks column of the TS Table 4.1-1 related to items 18a, 18b, 33 and 36. In the cases of the statements in the remarks column related to item 18a and 18b, the staff considers these statements as supportive when interpreting the difference between items 18a and 18b. By referencing the FSAR in the remark column for items 33 and 36, the background information and past data as given in the FSAR can be used to evaluate the results of the surveillance program. This information cannot be found in other areas of the TS. On this bases, the proposed changes related to deleting the statements and references to the FSAR related to items 18a, 18b, 33 and 36 in TS Table 4.1-1 are denied. However, the reference to the FSAR related to item 34 does not contribute substantial information in explaining this item nor does the FSAR give initial acceptable data that could be used to interpret the results from the surveillance program.

On this basis, the staff agrees with the licensee that there is no need to reference the FSAR for item 34 and therefore the proposed change that deletes the reference to the FSAR in the remark column for item 34 is acceptable.

8. TS 4.8c Steam Exclusion System

TS 4.8c requires the licensee to visually examine the mating surfaces of the dampers in the steam exclusion system at each refueling shutdown to assure that no physical changes have occurred that could affect the leakage rate. The licensee's proposed change would replace the words "at each refueling shutdown" with the words "once each year." The steam exclusion system is common to both units and could result in examining the dampers twice a year during the refueling shutdown for each unit. The staff has never intended to impose a requirement to examine the damper's mating surface twice annually. An annual inspection of these dampers has been and still is a standard frequency to assure the proper functioning of these dampers. The staff agrees with the licensee that the proposed change would clarify the TS as it relates to the examination frequency and is administrative in nature. On this basis, it is found that the proposed change on the examination frequency is acceptable.

9. Table TS 3.15-1 Containment pressure, level and hydrogen monitoring instrumentation

The licensee proposes to place limiting conditions for operation and surveillance requirements in the TS for the containment monitoring instrumentation related to containment water level and pressure and hydrogen monitors. By letter dated April 21, 1983, the staff informed the licensee that, based on submittals dated December 30, 1980 and December 27, 1982, it found that the design of these containment instruments do meet requirements of NUREG-0737 Items II.F.1.4, II.F.1.5 and II.F.1.6 and therefore the design is acceptable. A post implementation review of these items was performed by Region III and Report Nos. 50-282/8209 and 50-306/8209 addressing these items were issued on July 10, 1982. These reports conclude that the licensee has met the installation scheduler requirements of NUREG-0737. The licensee used STS as guidance in preparing the TS for Items II.F.1.4, II.F.1.5 and II.F.1.6. Based on the staff's review of the licensee's submittals, the proposed TS changes are within the guidelines of the STS except for the surveillance requirements in TS Table 4.1-1 related to the hydrogen monitor (Item II.F.1.6). In addition, the licensee inadvertently omitted the limiting condition of operation and the surveillance requirements for the containment water level narrow range. The licensee's proposed change was modified to include the requirements for the containment water level narrow range.

The licensee proposed surveillance for the hydrogen monitors requiring a monthly check and a calibration check during each refueling outage but no functional test nor any response test. The staff agrees with the licensee that a response test does not serve a useful purpose and therefore is not required. However, in order to meet the objective of the STS, the licensee's proposed change was modified to include a once per shift check, a quarterly calibration and a monthly functional test. These modifications to the proposed change

were discussed with and agree to by the licensee. On this basis, the staff finds the proposed TS related to the limiting conditions for operations and the surveillance requirements as modified for NUREG-0737 Item II.F.1.4, II.F.1.5 and II.F.1.6 acceptable.

Environmental Consideration

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendments.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 21, 1984

Principal Contributor:
D. C. DiIanni